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COMPLETE SPECIFICATION

Title of Invention

Adjustable pivots for folding panels

Name, address and nationality of
applicant(s) as in international
application form

CENTOR PRODUCTS PTY LIMITED, an Australian company of 997 Kingsford
Smith Drive, Eagle Farm, Queensland 4011, Australia

ADJUSTABLE PIVOTS FOR FOLDING PANELS

This invention relates to an adjustable pivot mount for a panel, typically the first panel (i.e. the panel nearest the jamb) of a folding door, window or similar closure. In particular, the invention is directed to adjustable top and bottom pivot mounts for a panel which allow the position of the panel to be adjusted both horizontally and vertically.

Throughout this specification and claims, the term "panel" is intended to include a door, window, shutter, screen, or component thereof, or similar building component, of a generally planar configuration mounted in an upright orientation and pivotable about a vertical pivot axis. The panel is typically the first panel of a plurality of hinged panels in a folding door or window.

BACKGROUND ART

Folding doors are notoriously difficult to install. A folding door may have many hinged panels, possibly up to eight or more, which fold apart in one or both directions. Even if there is only a small error in the width of each individual panel, the error can be compounded in multiple panel doors to create a substantial mismatch when the complete door is being installed.

Similarly, because the door or window openings are large when compared to a single door or window opening, it is more difficult to ensure that the jambs, head and sill of such openings are "true", i.e. straight, parallel and square.

It is known to use an adjustable pivot mount for a folding panel. The known pivot mount comprises a channel section having a sliding block therein. The channel section is fixed to the sill or head. The panel is pivotally mounted to the block. The position of the sliding block, and hence the panel, can be varied along the channel by tapping the sliding block with a hammer or

other implement. Once the sliding block has been moved to the desired position, a fixing bolt is threaded through the sliding block to engage the channel, and thereby fix the block relative to the channel.

5 It has been found that the known pivot mount is difficult and time consuming to adjust. The sliding block is invariably tapped beyond the desired position, and must then be tapped back. Usually, several to-and-fro movements are required before the block is finally 10 positioned near the desired location. If the sliding block is close to the desired position, it is difficult to obtain small incremental movements with any accuracy. Hence, the sliding block is not always fixed at the precise desired position. Further, it is difficult to 15 make later adjustments during the life of the door.

It is an object of this invention to provide an improved adjustable pivot mount for a panel which allows for accurate positioning of the panel.

It is also a preferred object of this invention 20 to provide an improved adjustable pivot mount which permits both horizontal and vertical adjustment.

SUMMARY OF THE INVENTION

In one broad form, the invention provides an 25 adjustable pivot mount for a panel, comprising a mounting member,

a slide block to which the panel is mounted in use for pivotal movement about a pivot axis, the slide block being movable relative to the mounting member in a 30 direction transverse to the pivot axis, and

a threaded member connected between the mounting member and the slide block to permit incremental screw adjustment of the position of the slide block relative to the mounting member.

35 Typically, the threaded member is a screw threaded through a bore in the mounting member and having its leading end journaled in the slide block.

In use, a hinge is fitted to the panel; the

hinge having a pivot or hinge pin which defines a pivot axis. The end of the pin is located in a bore suitably provided in the slide block.

5 The position of the slide block and pin, and hence the pivot axis of the panel, can be incrementally adjusted by the screw connected between the mounting member and the slide block.

10 Typically, two adjustable pivot mounts are used for the panel, one at the top and the other at the bottom. The top pivot mount is suitably located in an overhead track, and the bottom pivot mount is suitably located in a guide track below the panel.

15 In the bottom pivot mount, the pin is preferably threaded into the bore of the slide block. The vertical position of the hinge, and hence the panel to which it is affixed, can be adjusted by screw rotation of the pin into the slide block. Thus, the bottom pivot permits both vertical and horizontal adjustment of the position of the panel.

20 In order that the invention may be more readily understood and put into practice, preferred embodiments thereof will now be described with reference to the accompanying drawings.

25 BRIEF DESCRIPTION OF THE DRAWINGS

Fig 1 is a perspective view showing top and bottom adjustable pivot mounts on a panel.

Fig 2 is an end elevation of the bottom pivot mount fixed to a panel.

30 Fig 3 is a plan view of the bottom pivot mount.

Fig 4 is a sectional elevation of the bottom pivot mount.

35 Fig 5 is a front elevation showing the bottom pivot mount prior to adjustment.

Fig 6 is a front elevation showing the bottom pivot mount after adjustment.

Fig 7 is an end elevation of the top pivot

mount fixed to a panel, and

Fig 8 is a front elevation of the top pivot mount fixed to a panel

5

DESCRIPTION OF PREFERRED EMBODIMENTS

As shown in Figs 1 and 2, an adjustable bottom pivot 10 is fitted to the bottom of a panel 11. An adjustable top pivot 12 can be fitted to the top of the panel. The panel 11 is typically the first panel in a series of hinged panels which form a folding door or window. That is, the panel 11 is the closest panel to the jamb.

The bottom pivot is shown in more detail in Figs 3 and 4. The pivot mount 10 comprises a mounting member in the form of a channel-shaped mounting bracket 13 which, in use, is conveniently inserted in the guide track channel 14 of the folding door or window. The recessed location of the mounting bracket is aesthetically pleasing. A screw hole 15 is suitably provided in the mounting bracket 13 to enable the mounting bracket 13 to be fixed to the channel 14 by a countersunk screw.

The pivot mount 10 also comprises a slide block in the form of a slide nut 16 which is slidable within the mounting bracket 13 in the horizontal direction. The slide nut 16 has a threaded bore 17. In use, a pivot pin 18 having a threaded lower end is screwed into the bore 17 of slide nut 16. The pivot pin 18 has a fixed collar 19. The pivot pin 18 forms the hinge pin of a hinge 20. That is, the pivot pin locates within the hinge knuckle. The hinge 20 has an angled flap or leaf 21 which is fixed to the edge of the panel, typically by screws, as shown in Fig 1.

A locking nut 22 is also provided on the threaded end portion of hinge pin 18.

The adjustable pivot 10 further includes a threaded member in the form of an adjustment screw 23 extending between an upright flange or web 13b of the

mounting bracket 13 and the slide nut 16. More specifically, the screw 23 is threaded in a threaded bore in web 13b and has its distal or leading end journalled in the slide nut 16. That is, the leading end of the 5 adjustment screw 13 is captively held in the slide nut 16 by retaining pin 24, but is able to rotate about its horizontal axis.

In use, the mounting bracket 13 is fixed in the channel 14 at the desired location. It may be screwed in 10 place through the bore 17. The pivot pin 18 is screwed into the slide nut 16. The hinge 20, which is fixed to the panel 11, is then placed over the pivot pin 18 to rest on the collar 19 as shown in Fig 5. The 15 longitudinal axis of the pivot pin 18 defines the pivot axis of the hinge 20 and the panel 11.

The height of the panel 11 can be set or adjusted by screwing the pivot pin 18 into the slide nut 16 to the desired extent. The panel can be lifted or lowered one thread pitch for every full turn of the pivot 20 pin.

Once the pivot pin 18 has been screwed into the slide nut 16 to the desired extent, the locking nut 22 is screwed down onto the slide nut 16 to lock the pivot pin at that position, as shown in Fig 6.

25 The horizontal position of the pivot pin 18 and the panel 11 can be adjusted by the adjustment screw 23. By rotation of the adjustment screw, the position of the slide nut relative to the web 13b is shifted, thereby shifting the panel horizontally.

30 The top pivot mount 12 is shown in more detail in Figs 7 and 8. The construction of the top pivot mount 12 is similar to the bottom pivot mount 10, but without the vertical adjustment facility. The pivot mount 12 comprises a mounting member in the form of a C-section mounting bracket 25 which is located, in use, in 35 an overhead track 26 from which the folding door or window is suspended. Since the mounting bracket 25 is usually smaller than the overhead track channel 26, the

mounting bracket 25 is fitted within a spacer block 27 dimensioned to fit closely within the overhead track channel 26 as shown in Fig 7

A slide nut 28 is located within mounting bracket 25, and is moveable relative to the mounting bracket 25 in a horizontal direction. The slide nut 28 has a bore in which a pivot pin 29 locates. The pivot pin 29 forms the hinge pin of a hinge 30 fixed to the panel 11. The pivot pin 29 defines the hinge axis of the hinge 30. This hinge axis aligns with the hinge axis of hinge 20. The hinge 30 has an angled flap or leaf 31 which is fixed to the edge of the panel 11, typically by screws.

An adjustment screw 32 is connected between a flange or web portion 25a of mounting bracket 25 and the slide nut 28. The screw 32 is threaded through a threaded bore in web 25a, and its distal or leading end is journalled in the slide nut 28 in a similar manner to the bottom pivot 10.

The horizontal position of the hinge axis 30 and the panel 11 can be varied by rotating adjustment screw 32 to shift slide nut 28 relative to the fixed mounting bracket 25.

As both the top and bottom pivot mounts can be horizontally adjusted independently of each other, two different movements can be achieved. The first is a rotation of the panel about a horizontal axis. By adjusting one or other of the pivot mounts, or by adjusting both in opposing directions, the panel can be set true to the track. The second movement is a translational movement. By adjusting both pivot mounts in the same direction, the panel can be shifted horizontally, enabling the whole series of panels in a folding door to be adjusted left or right to centre in the opening, or to provide the desired fit in bi-parting doors.

The above described pivot mounts have several advantages, including

- Fine incremental adjustment of the horizontal position of pivot pin and panel can be achieved by fractional turning of the adjustment screw
- 5 ▪ The bottom pivot 10 allows both horizontal and vertical adjustment
- Each pivot mount is adjustable over the life of the folding door or window system, to accommodate misalignments arising through building movement
- 10 ▪ Each pivot mount can be located in an existing track, i.e. there is no need for a separate channel mounting.
- Once a pivot pin is inserted into a respective slide nut, the fixing screw of that pivot mount is fully concealed, providing security from unauthorised access
- 15 ▪ The mounting brackets are located inside the upper and lower tracks. Consequently, the mounting brackets are held against lateral movement or rotation about a vertical axis
- 20 ▪ The foregoing describes only some embodiments of the invention, and modifications which are obvious to those skilled in the art may be made thereto without departing from the scope of the invention as defined in the following claims
- 25

For example, the adjustment screw of the top and bottom pivots may be journaled but axially captive in the web of the mounting bracket, and have its leading end threaded into the slide nut. Rotation of the adjustment screw will thereby shift the position of the slide nut relative to the mounting bracket

30 Further, the pivot pin 29 may be screwed into a threaded bore in slide block 28 of the top pivot mount, such that the top pivot mount provides both vertical and horizontal adjustment instead of the bottom pivot mount. In this modified embodiment, the panel is suspended from the top pivot

THE CLAIMS DEFINING THE INVENTION ARE AS FOLLOWS

1 An adjustable pivot mount for a panel,
comprising

5 a mounting member,
a slide block to which the panel is mounted in
use for pivotal movement about a pivot axis, the slide
block being movable relative to the mounting member in a
direction transverse to the pivot axis, and

10 a threaded member connected between the
mounting member and the slide block to permit incremental
screw adjustment of the position of the slide block
relative to the mounting member

15 2 A pivot mount as claimed in claim 1, wherein
the threaded member is a screw in threaded engagement
with one of the slide block and mounting member, and
journalled in the other of the slide block and mounting
member

20 3 A pivot mount as claimed in claim 1, wherein
the threaded member is a screw threaded through a bore in
the mounting member and having its leading end journalled
in the slide block

25 4 A pivot mount as claimed in any preceding
claim, wherein the slide block has a bore adapted to
receive a pivot pin which defines the pivot axis

5 A pivot mount as claimed in claim 4, wherein
the pivot pin is threaded into the bore, the vertical
position of the panel being variable in use by rotation
of the pivot pin

6 6 A pivot mount as claimed in claim 5, further
30 comprising a locking nut threaded on the pivot pin

7 7 A pivot mount as claimed in any preceding
claim, wherein the mounting member is a channel section,
and the slide block is located within the channel
section

35 8 8 A panel and mount assembly, including
at least one panel,

a first hinge fixed to the panel and having a
first hinge pin defining a vertical pivot axis for the

panel,

5 a first mounting member fixed in position,
a first slide block having a bore, the first
hinge pin having an end thereof located in the bore, the
first slide block being moveable relative to the first
mounting member in a direction transverse to the pivot
axis, and

10 a first threaded member connected between the
first mounting member and the first slide block to permit
incremental screw adjustment of the position of the first
slide block relative to the first mounting member

9 An assembly as claimed in claim 8, wherein the
end of the first hinge pin is threaded into the bore of
the first slide block, the vertical position of the panel
15 being variable by screw adjustment of the first hinge
pin

10 An assembly as claimed in claim 9, further
comprising a locking nut threaded on the first hinge pin

11 An assembly as claimed in any one of claims 8
20 to 10, wherein the first mounting member is located in a
guide track below the panel

12 An assembly as claimed in any one of claims 8
to 11, wherein the first mounting member is a channel
section, and the first slide block is located within the
25 channel section

13 An assembly as claimed in any one of claims 8
to 12, wherein the first threaded member is a screw in
threaded engagement with one of the first slide block and
first mounting member, and journalled in the other of the
30 first slide block and first mounting member

14 An assembly as claimed in any one of claims 8
to 12, wherein the threaded member is a screw threaded
through a bore in the first mounting member and having
its leading end journalled in the first slide block

35 15 An assembly as claimed in any one of claims 8
to 14, further comprising a second hinge fixed to the
panel and having a second hinge pin,

a second mounting member fixed in position,

a second slide block having a bore in which an end of the second hinge pin is located, the second slide block being movable horizontally relative to the second mounting member, and

5 a second threaded member connected between the second mounting member and the second slide block to permit incremental screw adjustment of the position of the second slide block relative to the second mounting member

10 16 An assembly as claimed in claim 15, wherein the second threaded member is a screw in threaded engagement with one of the second slide block and second mounting member, and journalled in the other of the second slide block and second mounting member

15 17 An assembly as claimed in claim 15, wherein the second threaded member is a screw threaded through a portion of the second mounting member and having its leading end journalled in the second slide block

18 An assembly as claimed in any one of claims 15
20 to 17, wherein the second mounting member is fitted in an overhead track

19 An assembly as claimed in claim 18, wherein the overhead track is an inverted channel, the second mounting member being fitted to a spacer member which, in
25 turn, is located in the channel

20 An assembly as claimed in any one of claims 15 to 19, wherein the second mounting member is a channel section, and the second slide block is located within the channel section

30 21 An adjustable pivot mount for a panel, substantially as hereinbefore described with reference to Figs 1 to 6, or Figs 7 and 8

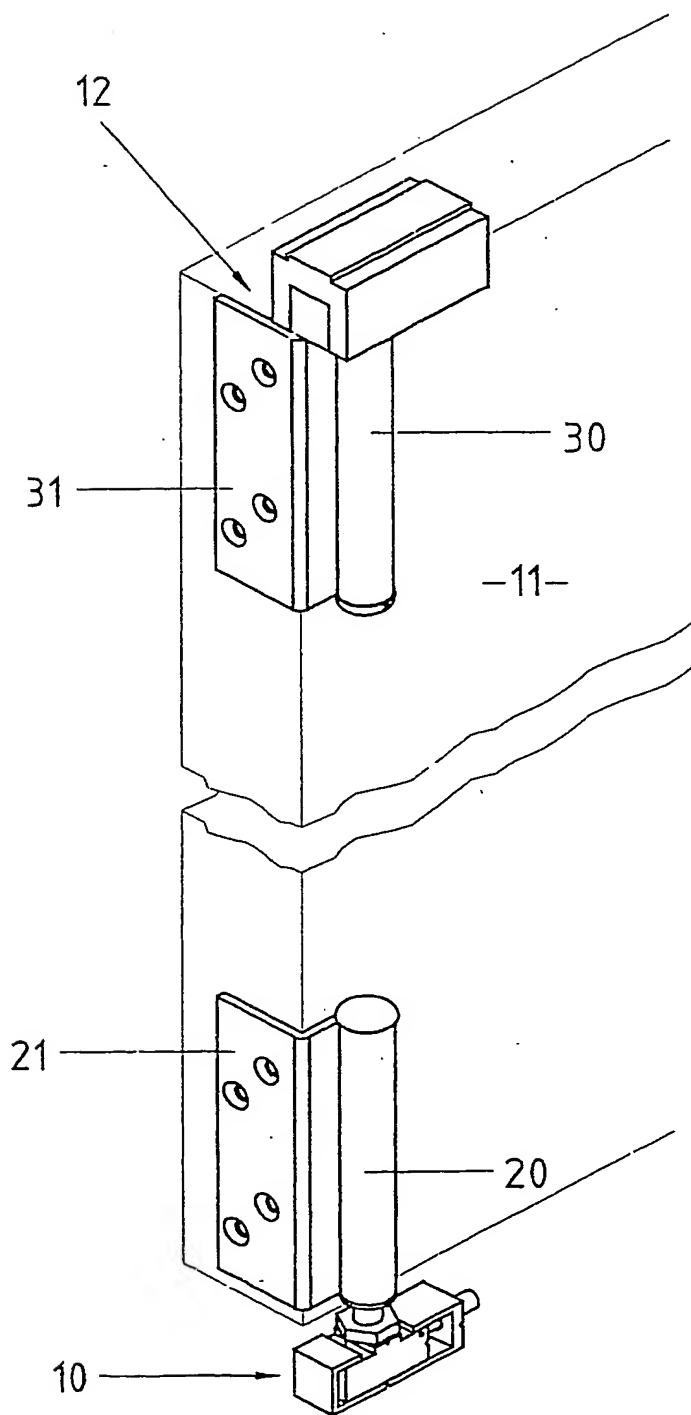


Fig 1.

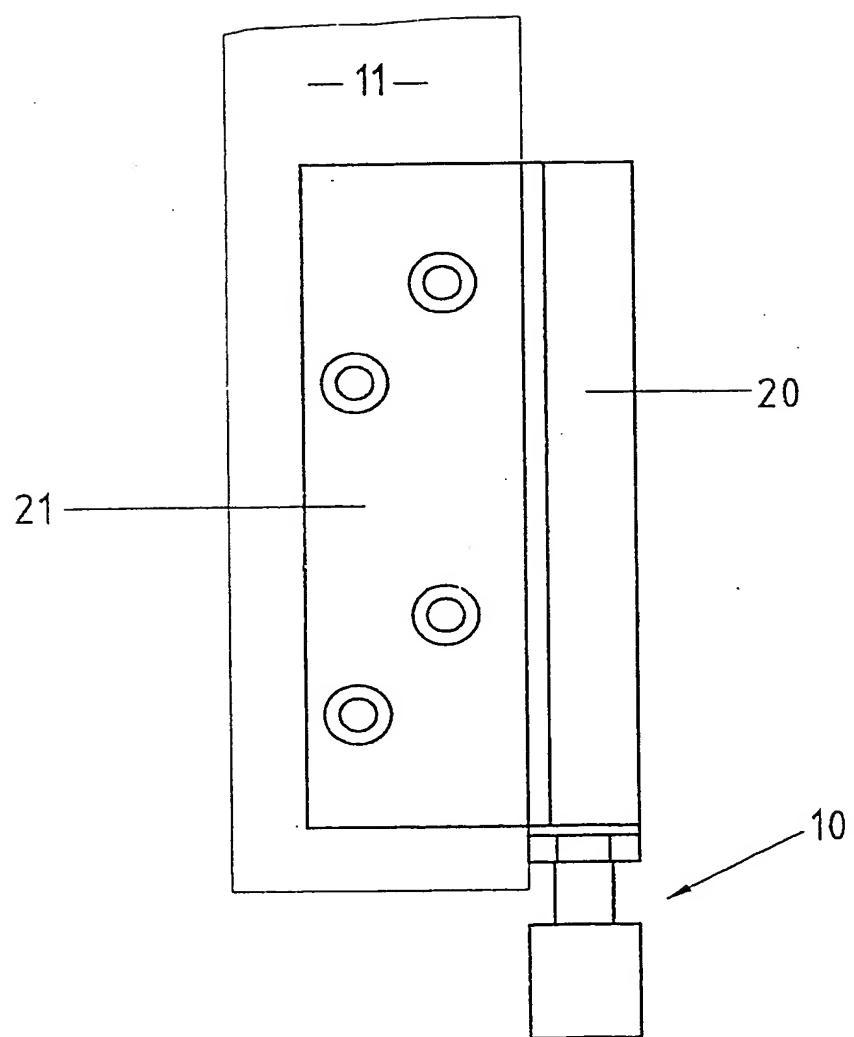


Fig 2.

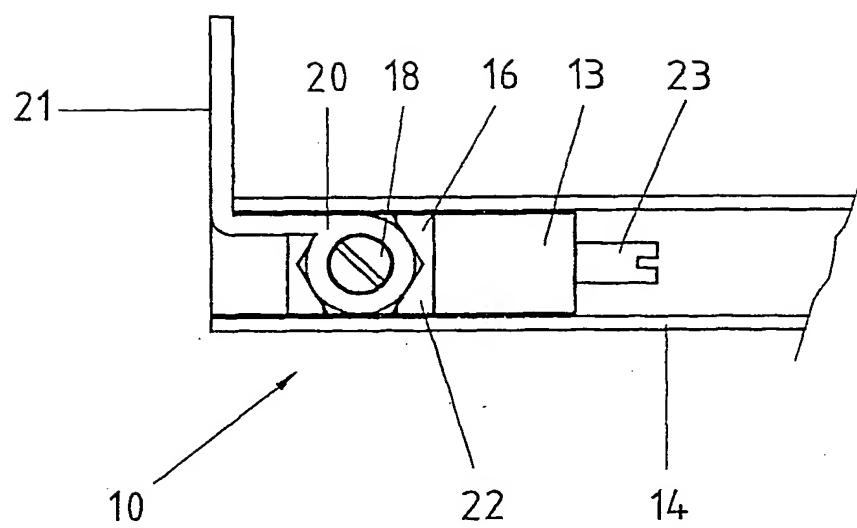


Fig. 3.

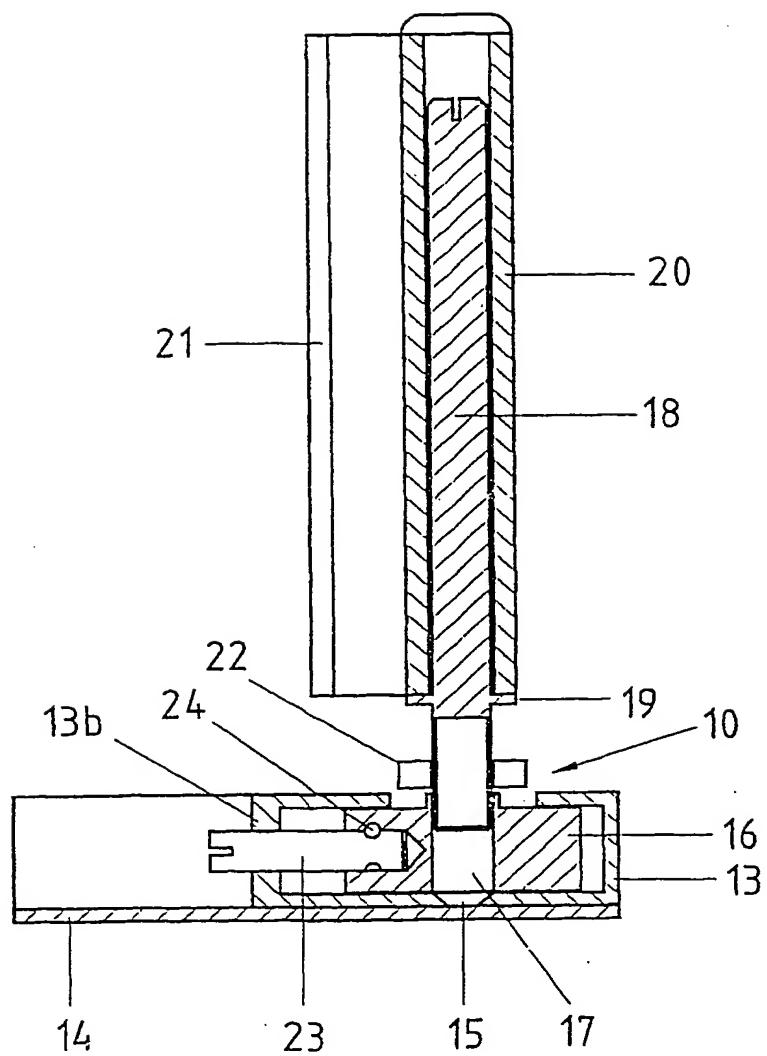


Fig. 4.

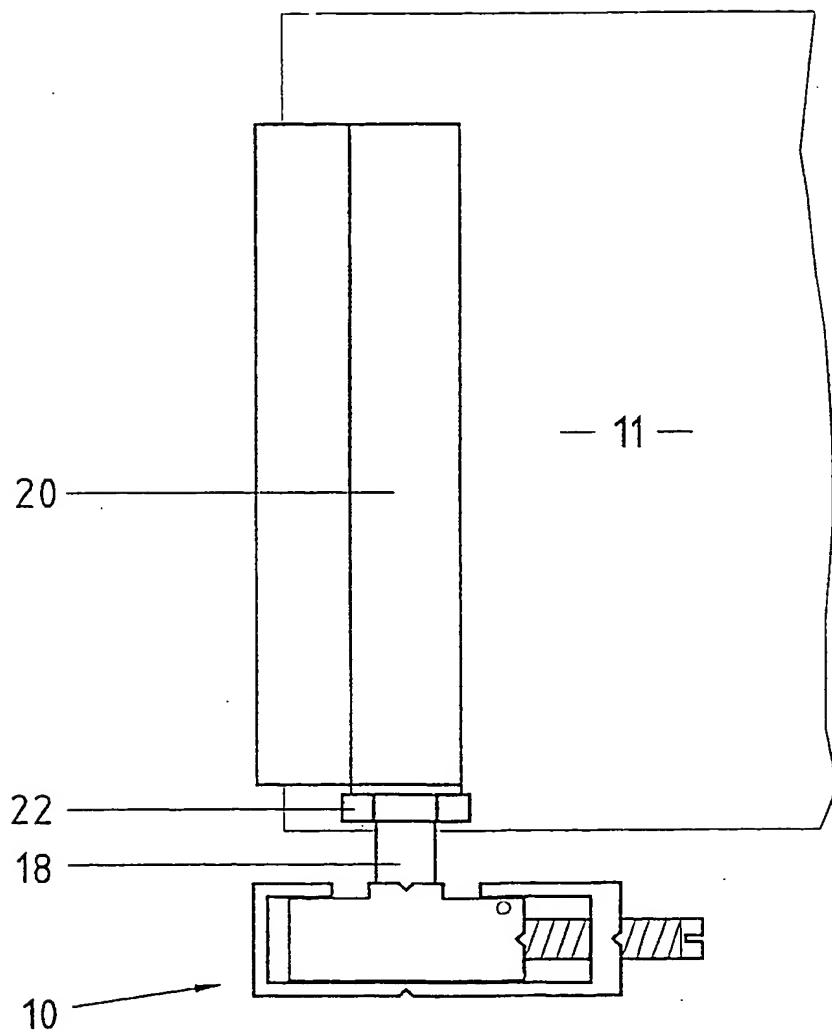


Fig 5.

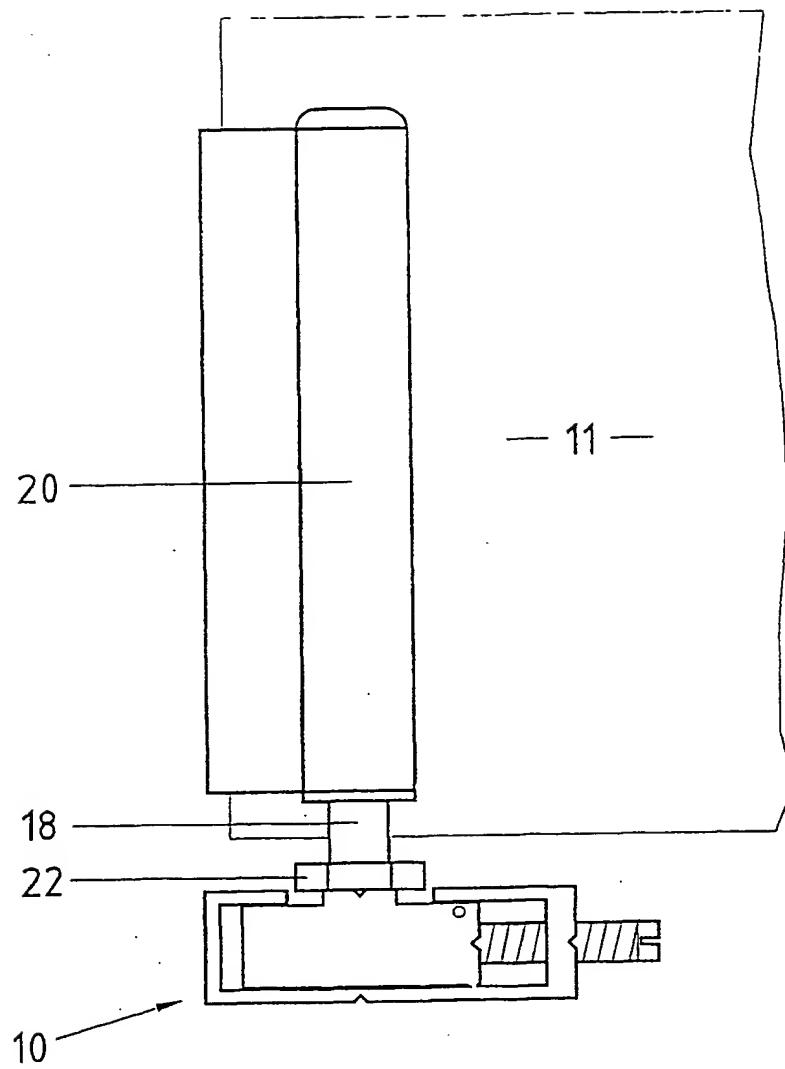


Fig 6.

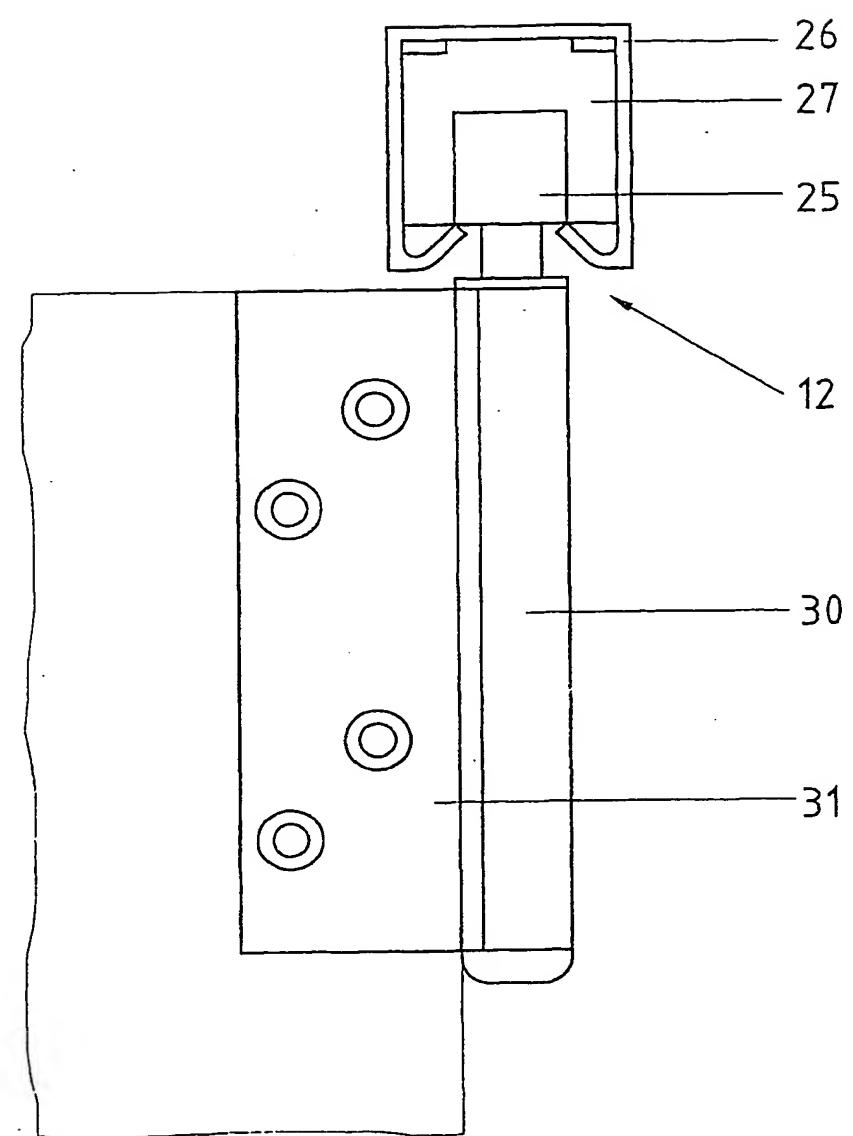


Fig. 7.

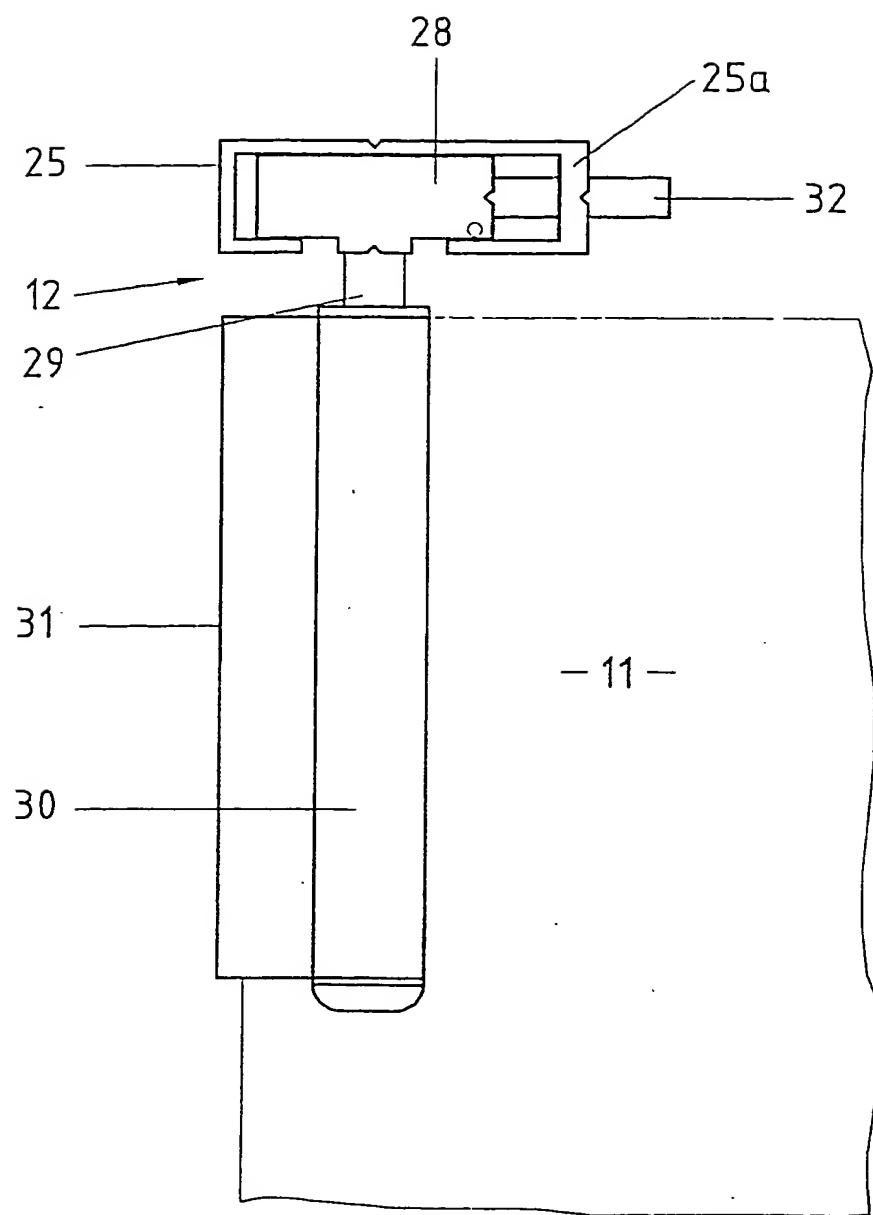


Fig. 8.

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